**Digital Appendix**

**Supplemental Information for Methods Section**

*Spectral data collection*

Ground-based spectral collections were completed using an Analytical Spectral Devices FieldSpec® 4 standard resolution (ASD FS4) field spectrometer. The ASD FS4 measures 2,151 channels that span the 350 to 2,500 nm reflected solar range using three detectors. Following the procedures in Clark et al. (2002), calibration data were collected from four sites in broad alluvial-fluvial gravel bars that were minimally vegetated and mostly lichen-free. The four sites covered areas of 0.31, 0.36, 0.51 and 0.76 ha. In the HyMap data, 86, 101, 143, and 210 HyMap pixels covered these areas, respectively. Although the rocks in these areas were mixed and varied at the fine spatial scale, at the HyMap 6 m pixel scale the calibration areas were spectrally homogeneous.

The bare fiber optic of the ASD was held at shoulder height (~1.4 m) while walking around the calibration site and recording measurements of reflected sunlight relative to a Spectralon® white reference panel. The integration times for dark current and white reference panel were set to 10 and 24 seconds, respectively. The ASD was configured for 6 second averages for each recording of surface reflectance. A great number of ASD recordings were made in each calibration site: 455, 319, 420, and 310, respectively. Subsequently, the relative reflectance measurements at each site were averaged. The average relative reflectance was converted to absolute reflectance by correcting for the absorption properties of Spectralon (see the discussion of processing ASD spectra in Kokaly and Skidmore, 2015). Furthermore, offsets in reflectance between the three ASD detectors were rectified using the procedure in the USGS PRISM software (Kokaly, 2011). PRISM functions were also used to compute multiplicative correction factors to convert HyMap apparent surface reflectance to ground-calibrated surface reflectance. Because flight lines were designed with substantial overlap, the four calibration sites could be used to directly calibrate eight of the nine flight lines. For the remaining flight line, the cross-calibration procedure of Kokaly et al. (2013) was used to compute an empirical correction factor using a non-vegetated and topographically flat area overlapping with an adjacent flight line.

*Spectrometer data accuracy and convolution*

The wavelength and bandpass characteristics of each spectrometer used in this study were evaluated using a set of reference materials: praseodymium doped glass (Corning Glass 5121), a National Institute of Standards and Technology (NIST) rare-earth doped glass (Standard Reference Material 2035), and a thin sheet of Mylar® plastic. The strong, narrow absorption features in these materials span the reflected solar region of the electromagnetic spectrum (400-2,500 nm). These results were compared to higher spectral resolution measurements (narrow bandpass) made on reference spectrometers in order to check the manufacturer reported wavelength and bandpass characteristics (see Kokaly et al., 2017b for discussion of evaluating spectrometers).

HyMap and ASD evaluations agreed with manufacturer reported values. The bandpass of the ASD spectrometer in the VNIR detector was found to meet the manufacturer specification of 3 nm bandpass at 700 nm; however, the bandpass function of this instrument has a parabolic variation across the range of the VNIR detector (see Kokaly et al., 2017b, for examples of parabolic bandpass function for other ASD spectrometers) with higher bandpass values at the ends of the detector range (~10.7 nm at 350 nm and ~7.5 nm at 1,000 nm). For the Corescan imaging spectrometer, two evaluations were conducted. The first using measurements of reference standards collected contemporaneous with the scans of the rock samples. From those data, an effective bandpass of 13 nm was calculated for the 2,000-2,500 nm wavelength region of the SWIR. A subsequent data collection was performed solely for the purpose of measuring the reference standards. The second evaluation, applied to raw data, resulted in an average bandpass of approximately 6 nm across the SWIR. The discrepancy between evaluations was determined to be a result of smoothing functions applied during the processing of raw data to reflectance.

Knowledge of wavelength and bandpass characteristics permitted convolution of the higher resolution (smaller bandpass) ASD spectra to ground-calibrate the coarser resolution (larger bandpass) HyMap data. It was also required to convolve higher resolution reference spectra listed in the MICA command file (discussed below) to wavelength and bandpass characteristics of HyMap and Corescan (using effective bandpass of 13 nm in the 2,000-2,500 nm range) imaging spectrometers for mineral predominance mapping.

*Reflectance conversion and predominant mineral classification*

The HyMap data were converted from radiance to reflectance using a multistep calibration process, adapted from the procedures in Kokaly et al. (2013). First, the radiance data were converted to apparent surface reflectance using radiative transfer programs- the Atmospheric CORrection Now (ACORN) version 6lx (ImSpec LLC, Palmdale, California, USA) and ATCOR-4 rugged terrain mode (ReSe Applications, Zurich, Switzerland). ATCOR-4 produced more realistic reflectance levels in steep, north-facing terrain with little or no direct solar illumination. Apparent surface reflectance values from the ATCOR-4 processing were further adjusted using ground-based reflectance measurements from calibration sites.

Reflectance images from HyMap and Corescan were processed using the Material Identification and Characterization Algorithm (MICA), a module of the PRISM software (Kokaly, 2011). MICA analysis identifies the spectrally dominant mineral(s) in each pixel of imaging spectrometer data by comparing continuum-removed spectral features in its reflectance spectrum to continuum-removed absorption features in reference spectra of minerals, vegetation, water, and other materials. The continuum removal calculation isolates an absorption feature from background spectral variations (Clark and Roush, 1984). The r2 value of the regression of the continuum-removed values establishes the degree of fit between each HyMap spectrum (pixel) and each of different reference spectra. The pixel is then assigned the mineral(s) designation of the standard with the best fit (highest r2 value). The MICA command file, provided at the end of the digital appendix, lists the reference spectra and absorption features analyzed.

Before spectral feature comparison is made, the reference spectra are convolved using PRISM from their native sampling and bandpass specifications to the spectral characteristics of the data being analyzed. Spectral analyses of multiple reference minerals and mineral mixtures permit more detailed classification based on mineral chemistry and/or complex mixtures. For our study, different white mica, chlorite, and mixed chlorite-white mica standards (see Table A1) proved important for distinguishing different geologic units related to mineral chemistry and/or relative proportions of white mica and chlorite. Representative ground-calibrated HyMap reflectance spectra are included in Fig. A1.

*Sediment/soil/rock chemistry and mineralogy – XRD*

The X-ray diffraction (XRD) scans were collected on a PANalytical X’Pert Pro MPD diffractometer with Bragg Bertano optics using copper radiation after following sample preparation methods of Eberl (2003).  Scans were collected from 2 to 55 degrees two-theta.  Semi-quantitative mineral estimates were calculated using MDI Whole Pattern Fit software which simultaneously calculates a whole pattern fit and a Rietveld refinement of the minerals.  The mixed-layer clay content was not included in the refinement; however, a qualitative estimate of the abundance was made based on clay mixture abundance.  Because the whole-rock mineralogy could not be normalized, all values were converted to qualitative abundance of major (>15%), minor (15 -5 %) and trace (<5%). Results are presented in Table S2.

The samples analyzed by XRD are predominantly splits of the pulp reject of soils collected for geochemical analysis. These samples contain only the fine size fraction and not coarse boulders, cobbles, and sand-sized material that was also present on the surface. Furthermore, since each sample was collected from an area of <0.25 m2, the sample is not necessarily representative of the mineral composition of an entire 6x6 meter pixel area from the imaging spectroscopy survey. Despite this, the data confirm the presence of variable proportions of the same minerals identified by remote sensing and do not indicate the presence of other spectrally detectable minerals not identified by the airborne survey. The only exception was for the mineral class amphibole+chlorite. In several small locations in the HyMap coverage, the MICA analysis produced the best match to serpentine group minerals (chysotile and antigorite). XRD analyses of samples collected from pixels matching the serpentine minerals established the spectrally dominant mineralogy as amphibole+chlorite. Both serpentine and amphibole exhibit spectral features near 2,320 and 2,390 nm. The initial assignment by MICA to serpentine was a result of inadequate representation of reference spectra for amphibole group minerals. XRD results are presented in Table A2 and Graham et al. (in press).

**Appendix Figures and Tables**

Fig. A1. HyMap spectra representative of mapped mineral classes and white mica wavelength positions. A) Reflectance spectra of carbonate, clay, amphibole+chlorite, and sulfate mineral classes. Amphibole+chlorite class established based on XRD results (Table A2). B) Reflectance spectra of epidote, chlorite, mixed chlorite+white mica, and white mica mineral classes. C) Reflectance spectra of white mica with varying wavelength position of the 2,200 nm absorption feature. D) Continuum-removed spectra of white micas with varying wavelength position of the 2,200 nm absorption feature. Spectra are scaled and offset for clarity.

|  |  |  |
| --- | --- | --- |
| Table A1: Command file reference spectra for HyMap and Corescan predominant mineral(s) mapping | | |
| **Names of predominant mineral(s) classes in the MICA output** | **Titles of source spectra in USGS Spectral Library Version 7 (Kokaly et al., 2017b)** | **Mineral class labeled in Figs. 3-6 & 8 (blank if not depicted)** |
| muscovite\_lowAl | Muscovite CU93-1 low-Al Phyl NIC4b RREF | white mica |
| muscovite\_medAl | Muscovite-medlowAl CU91-250A NIC4b RREF | white mica |
| muscovite\_medhighAl | Muscovite GDS113 Ruby NIC4aaa RREF | white mica |
| muscovite\_Fe-rich | Muscovite GDS116 Tanzania NIC4aaa RREF | white mica |
| illite\_imt1 | Illite IMt-1.b <2um ASDNGa AREF | white mica |
| illite\_gds4 | Illite GDS4 Marblehead ASDNGb AREF | white mica |
| kaolinite\_wxl | Kaolinite CM9 NIC4bbb RREF | kaolinite |
| kaolinite\_pxl | Kaolinite KGa-2 (pxl) NIC4bbb RREF | kaolinite |
| kaolinite+clay\_mica\_or\_halloysite | Halloysite NMNH106237 NIC4aaa RREF | kaolinite +white mica |
| kaolinite\_or\_dickite | Dickite NMNH106242 NIC4bb RREF | kaolinite |
| buddingtonite | Buddingtonite GDS85 D-206 BECKb AREF |  |
| buddingtonite+montmorillonite\_mix\_intimate | Buddingtnt+Na-Mont CU93-260B NIC4b RREF |  |
| alunite\_K\_250C | Alunite GDS96 K Syn (250C) NIC4a RREF |  |
| alunite\_Na\_450C | Alunite RES-3 Na Syn (450C) NIC4a RREF |  |
| pyrophyllite | Pyrophyllite PYS1A <850um NIC4a RREF | pyrophyllite |
| pyrophyllite.25+kaolinite.75 | Pyrophyl.25+wxlKaol.75 AMX17 NIC4b AREF | pyrophyllite |
| jarosite\_Na | Jarosite GDS24 Na NIC4bbb RREF | jarosite |
| jarosite\_K | Jarosite GDS99 K 200C Syn NIC4a RREF | jarosite |
| montmorillonite\_Na | Montmorillonite SWy-1 ASDNGb AREF | montmorillonite (smectite) |
| montmorillonite\_Ca | Montmorillonite SAz-1 ASDNGb AREF | montmorillonite (smectite) |
| nontronite | Nontronite NG-1.b <2um fr NIC4bb RREF |  |
| hectorite | Hectorite SHCa-1.Ac-B NIC4bb RREF |  |
| gypsum | Gypsum HS333.3B (Selenite) NIC4aaa RREF | gypsum |
| gypsum.6+montmorilloniteNa.4 | 0.6\*Gypsum HS333.3B (Selenite) NIC4aaa RREF + 0.4\*Montmorillonite SWy-1 NIC4bcc RREF | gypsum |
| chlorite\_lowFe | Chlorite SMR-13.a 104-150um BECKa AREF | chlorite/epidote |
| clinochlore | Clinochlore GDS158 Flagstaff NIC4bb RREF | clinochlore |
| clinochlore\_Fe | Clinochlore\_Fe SC-CCa-1.a NIC4aa RREF | clinochlore |
| thuringite | Thuringite SMR-15.c 32um NIC4aa RREF |  |
| epidote | Epidote GDS26.a 75-200um NIC4bbb RREF | chlorite/epidote |
| pyrophyllite.5+alunite.5\_mix\_intimate | Alun366+.50PyroPYS1A GDS222 BECKb AREF |  |
| alunite.5+kaolinite.5 | Alunite0.5+Kaol\_KGa-1 AMX3 NIC4bbb AREF |  |
| alunite.25+kaolinite.75 | Kaolwxl.75+Alun\_HS295 AMX14 ASDNGb AREF |  |
| kaolinite.5+muscoviteMedAl.5 | Kaol.5+MuscCU91-250A AMX13 ASDNGb AREF | kaolinite +white mica |
| kaolinite.5+muscoviteMedhighAl.5 | Kaol\_Wxl+0.5Musc\_Ruby AMX12 ASDNGa AREF | kaolinite +white mica |
| kaolinite+muscovite\_mix\_intimate | Kaol+Muscov\_intimate CU93-5C ASDNGa AREF | kaolinite +white mica |
| kaolinite+smectite\_mix\_intimate | Kaolin\_Smect H89-FR-2 .5Kao NIC4bb RREF | kaolinite +white mica |
| jarosite+muscovite\_mix\_intimate | Muscov+Jaros CU93-314 coatng ASDNGb AREF | jarosite |
| chlorite+muscovite\_mix\_intimate | Chlorite+Muscovite CU93-65A ASDNGa AREF | chlorite+white mica |
| clinochlore\_Fe.3+muscovite.7 | 0.3\*Clinochlore\_Fe SC-CCa-1.a NIC4aa RREF + 0.7\*Muscovite CU93-1 low-Al Phyl NIC4b RREF | clinochlore+white mica |
| calcite\_abundant | Calcite WS272 ASDNGa AREF | calcite |
| calcite | Calcite WS272 ASDNGa AREF | calcite |

Table A1. continued

|  |  |  |
| --- | --- | --- |
| **Names of predominant mineral(s) classes in the MICA output** | **Titles of source spectra in USGS Spectral Library Version 7 (Kokaly et al., 2017b)** | **Mineral class labeled in Figs. 3-6 & 8 (blank if not depicted)** |
| dolomite\_abundant | Dolomite HS102.3B ASDNGb AREF |  |
| dolomite | Dolomite HS102.3B ASDNGb AREF |  |
| calcite.5+dolomite.5 | Calcite.5+Dolomite.5 AMX8 ASDNGb AREF | calcite+dolomite |
| carbonate\_Fe\_bearing | Siderite HS271.3B ASDNGa AREF |  |
| calcite.18+dolomite.22+montmorilloniteNa.6 | 0.18\*Calcite WS272 ASDNGa AREF + 0.22\*Dolomite HS102.3B ASDNGb AREF + 0.60\*Montmorillonite SWy-1 ASDNGb AREF | carbonate+mica/clay |
| calcite.18+dolomite.22+montmorilloniteCa.6 | 0.18\*Calcite WS272 ASDNGa AREF + 0.22\*Dolomite HS102.3B ASDNGb AREF + 0.60\*Montmorillonite SAz-1 ASDNGb AREF | carbonate+mica/clay |
| calcite.8+montmorilloniteNa.2\_mix\_intimate | Calcite.80+Mont\_Swy-1 GDS212 ASDNGa AREF | carbonate+mica/clay |
| calcite.25+montmorilloniteCa.75 | 0.25\*Calcite WS272 ASDNGa AREF + 0.75\*Montmorillonite SAz-1 ASDNGb AREF | carbonate+mica/clay |
| calcite.25+montmorilloniteNa.75 | 0.25\*Calcite WS272 ASDNGa AREF + 0.75\*Montmorillonite SWy-1 ASDNGb AREF | carbonate+mica/clay |
| calcite.5+muscoviteMedHiAl.5 | 0.5\*Calcite WS272 ASDNGa AREF + 0.5\*Muscovite GDS113 Ruby ASDNGa AREF | carbonate+mica/clay |
| calcite.5+muscoviteMedAl.5 | 0.5\*Calcite WS272 ASDNGa AREF + 0.5\*Muscovite-medlowAl CU91-250A ASDNGb AREF | carbonate+mica/clay |
| calcite.3+muscoviteLowAl.7 | 0.3\*Calcite WS272 NIC4aaa RREF + 0.7\*Muscovite CU93-1 low-Al Phyl NIC4b RREF | carbonate+mica/clay |
| dolomite.5+montmorilloniteNa.5 | Dolomite.5+Na-Mont.5 AMX21 ASDNGb AREF | carbonate+mica/clay |
| dolomite.5+montmorilloniteCa.5 | Dolomite.5+Ca-Mont.5 AMX10 ASDNGb AREF | carbonate+mica/clay |
| kaolinite.2+calcite.8\_mix\_intimate | Calcite.80wt+Kaol\_CM9 GDS213 ASDNGa AREF | carbonate+mica/clay |
| chalcedony | Chalcedony CU91-6A ASDNGa AREF |  |
| hydrated\_silica | Opal TM8896 (Hyalite) NIC4aa RREF |  |
| tremolite\_or\_talc | Tremolite HS18.3B NIC4ccc RREF |  |
| talc\_or\_tremolite | Talc GDS23 74-250um NIC4aaa RREF |  |
| serpentine\_antigorite\_or\_calcite+dolomite | Antigorite NMNH96917.a >250 ASDNGb AREF | calcite+dolomite |
| serpentine\_chrysotile | Chrysotile HS323.1B ASDNGa AREF | amphibole+chlorite |
| serpentine\_antigorite\_withironfeat | Antigorite NMNH96917.a >250 ASDNGb AREF | amphibole+chlorite |
| serpentine\_chrysotile\_withsecondfeat | Chrysotile HS323.1B ASDNGa AREF | amphibole+chlorite |
| serpentine\_antigorite\_withsecondfeat | Antigorite NMNH96917.a >250 ASDNGb AREF | amphibole+chlorite |
| topaz | Topaz HS184.3B ASDNGb AREF |  |
| vegetation\_green | Engelmann-Spruce ES-Needls-1 ASDFRa AREF | vegetation |
| vegetation\_npv\_and\_green | Rangeland C04-170 S30% G24% ASDFRa AREF | vegetation |
| snow\_melting | Melting\_snow mSnw01a ASDFRa AREF | ice/snow/water |
| snow\_slush | Melting\_snow mSnw09 (slush) ASDFRa AREF | ice/snow/water |
| water | Seawater\_Coast\_Chl SW1 BECKa AREF | ice/snow/water |
| water\_sediment\_high | Water+Montmor SWy-2+5.01g/l ASDFRa AREF | ice/snow/water |
| water\_sediment\_low | Water+Montmor SWy-2+0.50g/l ASDFRa AREF | ice/snow/water |

Table A1. continued

|  |  |  |
| --- | --- | --- |
| **Names of predominant mineral(s) classes in the MICA output** | **Titles of source spectra in USGS Spectral Library Version 7 (Kokaly et al., 2017b)** | **Mineral class labeled in Figs. 3-6 & 8 (blank if not depicted)** |
| dry\_veg\_grass | Grass\_Golden\_Dry GDS480 ASDFRa AREF | Vegetation |
| dry\_veg\_grass\_2\_3um | Grass\_Golden\_Dry GDS480 ASDFRa AREF | Vegetation |
| dry\_veg\_nongrass | Lodgepole-Pine LP-Needles-3 ASDFRa AREF | Vegetation |
| dry\_veg\_nongrass\_2\_3um | Lodgepole-Pine LP-Needles-3 ASDFRa AREF | Vegetation |

Table A2. X-ray diffraction data for soils and rocks from the Orange Hill, Bond Creek, Nikolai Greenstone and Nikonda Creek areas.

|  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Scan ID | Muscovite | Illite | R1\_Ord\_I/S | ML clay  (smectite) | Kaolinite | Chlorite | Pyrophyllite | Gypsum | Jarosite | Calcite | Amphibole | Hymap\_result |
| 14HYPORH002 | 53 |  | >15% |  |  | 12 |  |  | 4 |  |  | Covered/Musc |
| 14HYPORH012 | 27 |  | 5-15% |  |  | 5 |  | 15 | 9 |  |  | Gyp + Mont |
| 14HYPORPH014 | 24 |  | 5-15% |  | 10 | 6 |  | Present | 10 |  |  | Gyp + Mont |
| 15HYPORPH006 | 44 |  | Present | 5-15% |  | 7 |  | 6 | 9 |  |  | Musc |
| 15HYPORPH011 | 36 |  | 5-15% |  |  | 8 |  | 19 | 6 |  |  | Covered/musc |
| 15HYPORPH023 | 24 |  | 5-15% |  |  | 5 |  | 2 | 8 |  |  | Musc |
| 15HYPORH027 | Not detected | 21 | <5% |  |  | 6 |  | 1 | 2 |  |  | Mont |
| 15HYPBDC029 | 39 |  | >15% |  |  | 4 |  |  | 10 |  |  | Jar + Musc |
| 15HYPBDC030 | 22 |  | >15% |  |  | 5 |  | 2 | 7 |  |  | Muscovite/Mont/Clino+Musc |
| 15HYPBDC031 | 33 |  | >15% |  |  | 5 |  | tr | 7 |  |  | Mont |
| 15HYPBDC032 | 24 |  | >15% |  |  | 7 |  | 1 | 6 |  |  | Musc/Mont |
| 15HYPBDC036 | 30 |  | >15% |  |  | 5 |  | 2 | 5 |  |  | Veg/ND/Mont |
| 15HYPBDC043 | 33 |  | >15% |  |  | 9 |  | 5 | 3 |  |  | Mont |
| 15HYPBDC047 | 35 |  | >15% |  |  | 7 |  | 4 | 4 |  |  | Mont/Musc |
| 15HYPBDC048a | 21 |  | >15% |  |  | 4 |  | 7 | 10 |  |  | Mont/Musc |
| 15HYPBDC049a | 30 |  | >15% |  |  | 4 | ? | 5 | 3 |  |  | Mont/Musc |
| 15HYPBDC050B | 30 |  | >15% |  |  | 6 |  | 4 | 5 |  |  | Mont/Musc |
| 15HYPBDC053 | 24 |  | >15% |  |  | 7 |  | 3 | 2 |  |  | Mont/Musc |
| 15HYPPYR063 | 5 |  | <5% | 5-15% |  | 5-15% |  | 10 | tr |  |  | Pyroph |
| 15HYPPYR064 | <5% | <5%? |  |  |  | 29 |  |  | tr |  |  | Pyroph |
| 15HYPPYR067 | 20 | 20 |  |  |  |  |  |  | 3 |  |  | Musc |
| 15HYPPYR069 |  |  |  | <5% | 22 | <5%? |  |  | 37 |  |  | Pyroph + Kaol |
| 15HYPPYR070 |  |  | >15% |  |  |  | Present |  | >15% |  |  | Pyroph + Kaol |
| 15HYPPYR071 |  | <5% | >15% |  |  | <5% | <5% |  | 5-15% |  |  | Pyroph + Kaol |
| 15HYPPYR073B |  |  |  | 5-15% | 11 | 8 | 68 |  | 3 |  |  | Pyroph |
| 15HYPPYR074 |  |  |  | ~5% | 16 | <5% | 42 |  | 12 |  |  | Pyroph/Pyroph + Kaol |
| 15HYPPYR117 |  | <5% |  | ~5% | 7 | 36 | 17 |  | 0 |  |  | Cal + Musc/Pyroph + Kaol |
| 15HYPORH075 | 5-15% | ? |  | ~15% | 10 | 32 |  |  |  |  |  | Kao + Musco |
| 15HYPORH079 | 10 | 30 |  | 5-15% | 11 | 11 |  |  |  |  |  | Kao + Musco |
| 15HYPORH082 | 15 | 15 |  |  |  | 30 |  | 13 |  |  |  | Clino + Musc |
| 15HYPBDC095 | 20 |  |  | 5-15% | 8 | 28 |  |  | 3 |  |  | Muscovite/Clino + Musc |
| 15HYPPYR107 |  | <5% |  | 5-15% | 8 | 17 | 48 |  |  |  |  | Pyroph |
| 15HYPPYR117(D) |  | <5% |  | 5-15% | minor | 20 | 48 |  |  |  |  | Cal + Musc/Pyroph + Kaol |
| 16HYPSERP37-1\* |  |  |  |  |  | 30 |  |  |  |  | 38 | Serpentine\*\* |
| 16HYPSERP37-2\* |  |  |  |  |  | 22 |  |  |  |  | 37 | Serpentine\*\* |
| 16HYPSERP35-6\* |  |  |  |  |  | 5 |  |  |  |  | 59 | Serpentine\*\* |
| 16HYPSERP34\* |  |  |  |  |  | 7 |  |  |  | 1 | 53 | Serpentine\*\* |
| I/S = Illite/smectite, ML Clay = Mixed-layer clay, R1\_Ord = Reichweite 1 Ordered illite/smectite, Kaol = kaolinite, Chl = chlorite, Pyroph = pyrophyllite, Gyp = gypsum, Jar = jarosite, Mont = montmorillonite, Musc = muscovite, Veg = vegetation, ND = unmapped, Clino = clinochlore, Cal = calcite, Present = identified but unquantified. \* = rock sample, \*\* = Best fit in command file was to serpentine, XRD indicates spectral shape is the result of a mixture of amphibole and chlorite. No serpentine detected. | | | | | | | | | | | | |